

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A device manufacturing method comprising:
  - providing a substrate;
  - providing a first layer of electromagnetic radiation sensitive material on said substrate;
  - providing a second layer of electromagnetic radiation sensitive material on said first layer of radiation sensitive material, the first and second layers of electromagnetic radiation sensitive material having a same tonality, said second layer of radiation sensitive material being of a different material than said first layer of radiation sensitive material, said first layer of radiation sensitive material having a dose size of at least approximately 1.5 times the magnitude of a dose size of said second layer of radiation sensitive material;
  - providing a beam of electromagnetic radiation using an illumination system;
  - imparting said beam of radiation with a desired pattern in its cross-section by employing a patterning device; and
  - projecting said patterned beam of radiation onto a target portion of said substrate to expose both said first and second layers of radiation sensitive material,  
wherein said first and the second layer of electromagnetic radiation sensitive material materials are based on a similar generic solvent is selected such that after developing the second layer a side portion of the developed second layer defines a negative slope with respect to a direction substantially perpendicular to a surface of the substrate.
2. (Original) The device manufacturing method of Claim 1, wherein said first layer of radiation sensitive material has a dose size of approximately 1.5 times to 2.5 times the magnitude of the dose size of said second layer of radiation sensitive material.
3. (Original) The device manufacturing method of Claim 1, wherein said first layer is thinner than said second layer.

4. (Original) The device manufacturing method of Claim 1, wherein said first layer is between 100 and 500nm thick and said second layer is between 500 and 1500 nm thick.

5. (Original) The device manufacturing method of Claim 1, wherein said first and second materials are substantially immiscible.

6. (Cancelled)

7. (Previously Presented) A device manufacturing method comprising:  
providing a substrate;  
providing a first layer of electromagnetic radiation sensitive material on said substrate;

providing a second layer of electromagnetic radiation sensitive material on said first layer of radiation sensitive material, the first and second layers of electromagnetic radiation sensitive material having a same tonality, said second layer of radiation sensitive material being of a different material than said first layer of radiation sensitive material, said first layer of radiation sensitive material having a dose size of at least approximately 1.5 times the magnitude of a dose size of said second layer of radiation sensitive material;

providing a beam of electromagnetic radiation using an illumination system;  
imparting said beam of radiation with a desired pattern in its cross-section by employing a patterning device; and  
projecting said patterned beam of radiation onto a target portion of said substrate to expose both said first and second layers of radiation sensitive material,  
wherein said first and second materials are based on bulky-acetal polymers.

8. (Original) The device manufacturing method of Claim 7, wherein said first and second materials have different solvents.

9. (Cancelled)

10. (Original) The device manufacturing method of Claim 1, wherein said first and second layer materials are positively radiation sensitive.

11. (Original) The device manufacturing method of Claim 1, further comprising developing said first and second layers of radiation sensitive material to remove portions which have been exposed.

12. (Original) The device manufacturing method of Claim 11, wherein said removed portion of said first layer is smaller than said removed portion of said second layer.

13. (Previously Presented) A device manufacturing method comprising:

providing a substrate;

providing a first layer of electromagnetic radiation sensitive material on said substrate;

providing a second layer of electromagnetic radiation sensitive material on said first layer of radiation sensitive material, the first and second layers of electromagnetic radiation sensitive material having a same tonality, said second layer of radiation sensitive material being of a different material than said first layer of radiation sensitive material, said first layer of radiation sensitive material having a dose size of at least approximately 1.5 times the magnitude of a dose size of said second layer of radiation sensitive material;

providing a beam of electromagnetic radiation using an illumination system;

imparting said beam of radiation with a desired pattern in its cross-section by employing a patterning device;

projecting said patterned beam of radiation onto a target portion of said substrate to expose both said first and second layers of radiation sensitive material; and

developing said first and second layers of radiation sensitive material to remove portions which have been exposed,

wherein said second layer overhangs said first layer after developing.

14. (Cancelled)

15. (Cancelled)

16. (Previously Presented) A device manufacturing method comprising:

providing a substrate;

providing a first layer of electromagnetic radiation sensitive material on said substrate;

providing a second layer of electromagnetic radiation sensitive material on said first layer of radiation sensitive material, the first and second layers of electromagnetic radiation sensitive material having a same tonality, said second layer of radiation sensitive material being of a different material than said first layer of radiation sensitive material, said first layer of radiation sensitive material having a dose size of at least approximately 1.5 times the magnitude of a dose size of said second layer of radiation sensitive material;

providing a beam of electromagnetic radiation using an illumination system;

imparting said beam of radiation with a desired pattern in its cross-section by employing a patterning device;

projecting said patterned beam of radiation onto a target portion of said substrate to expose both said first and second layers of radiation sensitive material;

developing said first and second layers of radiation sensitive material to remove portions which have been exposed;

depositing a first layer of metal onto said substrate;

lifting off said first and second layers of radiation sensitive material to leave a T-gate on said substrate; and

before said lifting off, depositing a second layer of metal onto said substrate.

17. (Original) The device manufacturing method of Claim 16, wherein said first layer of metal comprises Ti or Pt and said second layer comprises Pt or Au.

18. (Original) The device manufacturing method of Claim 16, further comprising depositing a third layer of metal onto said substrate.

19. (Original) The device manufacturing method of Claim 18, wherein said third layer of metal comprises Au.

20. (Currently Amended) A substrate for use in an electromagnetic lithographic apparatus, said substrate comprising:

a first layer of electromagnetic radiation sensitive material attached to a surface; and

a second layer of electromagnetic radiation sensitive material attached to said first layer of radiation sensitive material, ~~said first and second materials based on similar generic solvents~~ a side portion of the developed second layer defining a negative slope with respect to a direction substantially perpendicular to a surface of the substrate, and

wherein said first layer of radiation sensitive material is of a different material than said second layer of radiation sensitive material and said first layer of radiation sensitive material has a dose size of at least approximately 1.5 times the magnitude of the dose size of said second layer of radiation sensitive material.

21. (Original) The substrate of Claim 20, wherein said first layer of radiation sensitive material has a dose size of approximately 1.5 times to 2.5 times the magnitude of the dose size of said second layer of radiation sensitive material.

22. (Cancelled).

23. (Previously Presented) The device manufacturing method of Claim 1, wherein said substrate comprises GaAs, Si, GaN, InP, or SiGa.

24. (Previously Presented) The device manufacturing method of Claim 1, wherein said method is a process for the manufacture of an integrated circuit having a T-gate.

25. (Previously Presented) The substrate of Claim 20, wherein said substrate comprises GaAs, Si, GaN, InP, or SiGa.

26. (Cancelled).